Grade 9 The Line

① $y = mx + b$ slope / y int

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\frac{\text{rise}}{\text{run}}$

② $ax + by = c$ - mixtures - two variable

③ $Ax + By + C = 0$ STANDARD FORM

Feb 2-1:37 PM

Sony is selling televisions for $500.

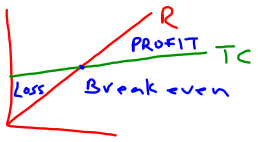
It costs a set up fee of $10, 000 and each TV costs $250 in material. How many TVs must they sell to break even?

$y_1 = 500x$ Revenue

$y_2 = 250x + 10000$ Total Cost

Break Even $y_1 = y_2$

Feb 2-2:08 PM



Feb 2-2:14 PM

Simple Substitution

$y_1 = y_2$

$500x = 250x + 10\,000$

$500x - 250x = 10\,000$

$\frac{250x}{250} = \frac{10000}{250}$

$x = 40$

At 40 TVs Sony will break even. Before they lose money, after 40 TVs they make a profit.

Feb 2-2:16 PM

Grade 10

- Linear Systems
- Quadratics
- Trigonometry

Feb 2-2:20 PM

Quadratics

① Vertex Form $y = a(x-h)^2 + k$

② Zeros - Factored Form $y = a(x-s)(x-t)$

③ $ax^2 + bx + c = 0$ — Standard Form

Feb 2-2:22 PM

Linear Equations

Graphing using Slope/y-int

$y = mx + b$

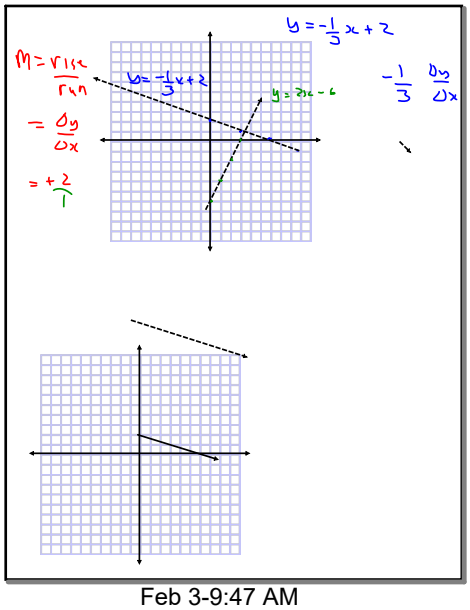
$y = 2x - 6$ $\quad m = +2 \quad b = -6$

$y = m_1 x + b$

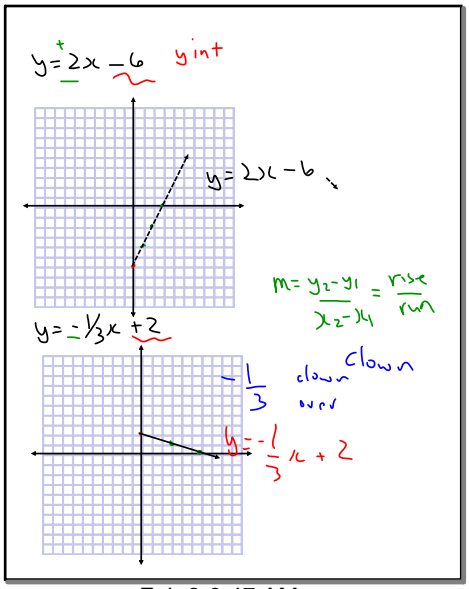
$y = -\frac{1}{3}x + 2$ $\quad m = -\frac{1}{3} \quad b = +2$

y int = -6 $\quad m = \frac{+2}{1}$ $\quad b = +2$

Feb 3-1:34 PM



Feb 3-9:47 AM



Feb 3-9:47 AM

Graph $y = a(x-h)^2 + k$

1. $y = x^2$
2. $y = -2x^2$
3. $y = (x-2)^2$
4. $y = x^2 - 6$
5. $y = -2(x+2)^2$
6. $y = 2x^2 + 3$
7. $y = -\frac{1}{4}x^2$
8. $y = 2(x+2)^2 + 3$

a = direction, skinny or wide

h = left/right

k = up/down

Feb 2-2:26 PM

$y = a(x-h)^2 + k$ $\quad y = x^2$

over 1 up 1

over 2 up 4

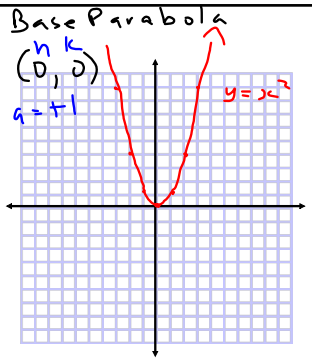
over 3 up 9

over 4 up 16

Base Parabola

(h, k) (0, 0)

a = +1



Feb 3-9:47 AM

$y = a(x-h)^2 + k$

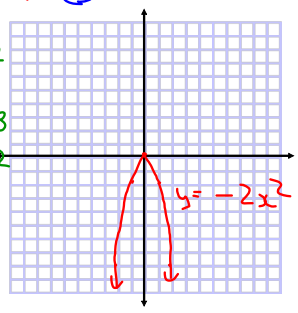
$y = -2x^2$ $\quad (0,0)$ $\quad a = -2$

over 1 down 1 x^2 2

over 2 down 4 x^2 8

over 3 down 9 x^2 18

4 down 16 x^2 32



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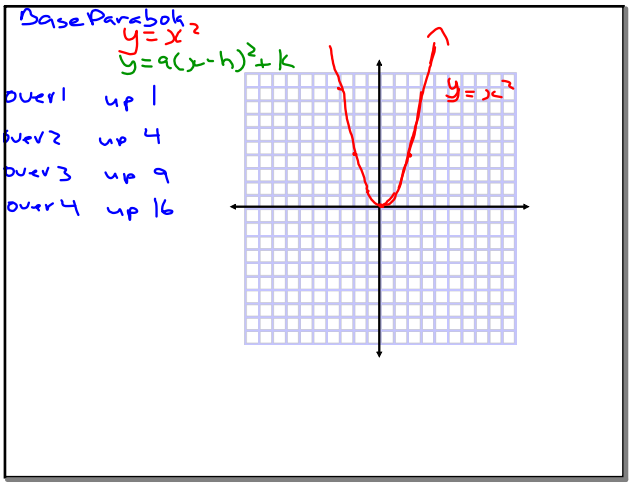

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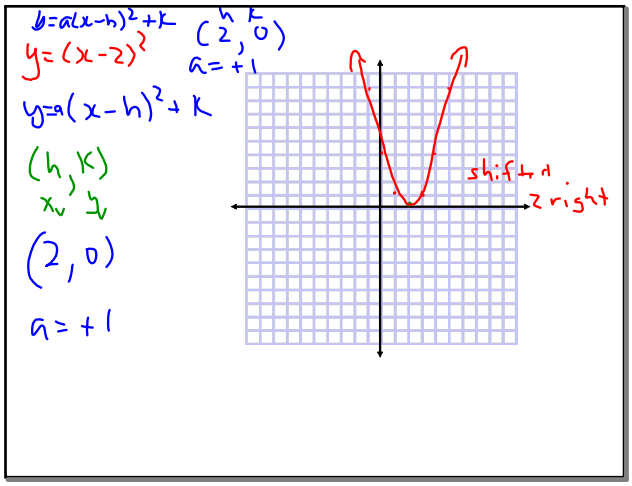

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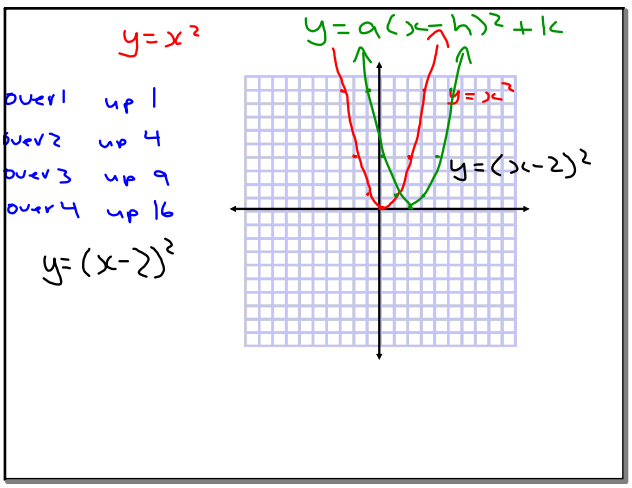

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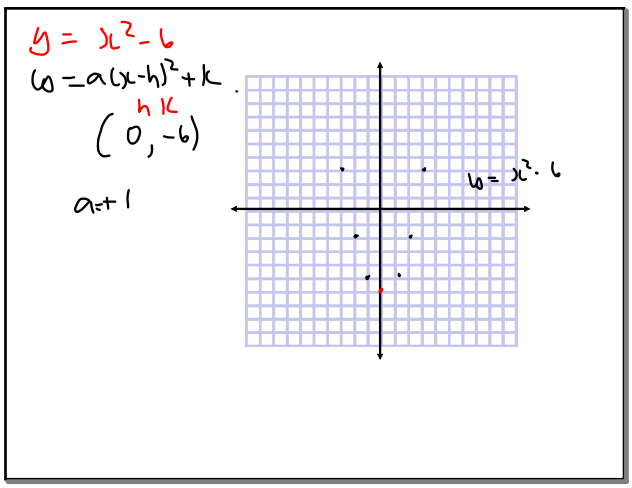

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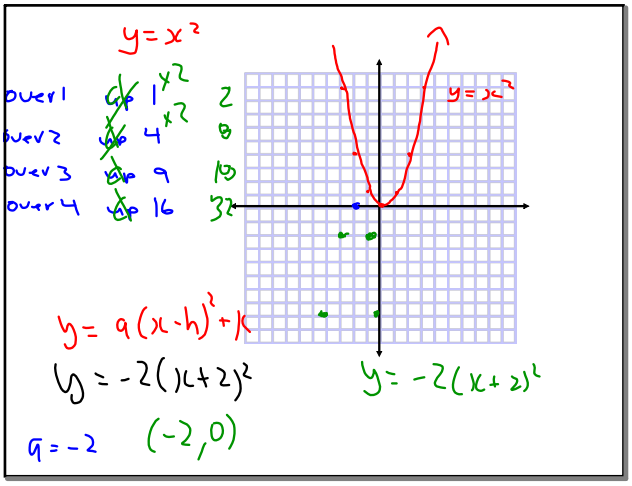

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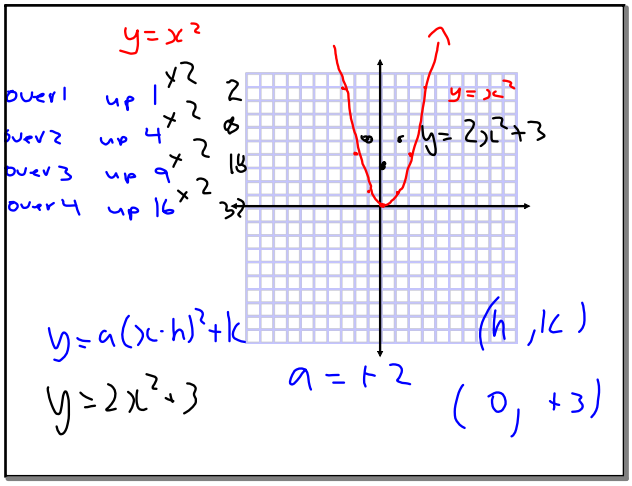

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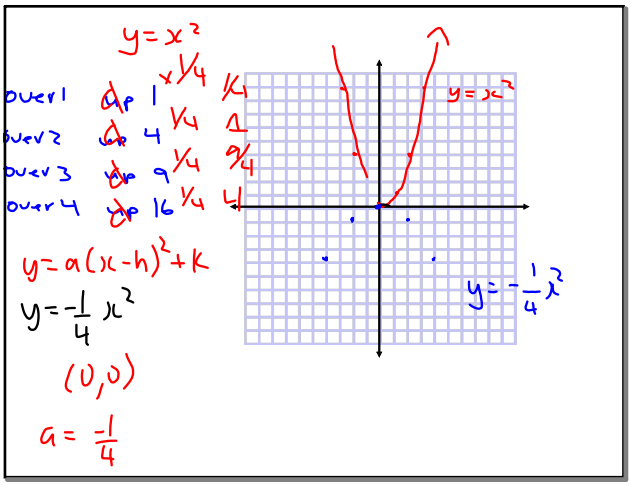

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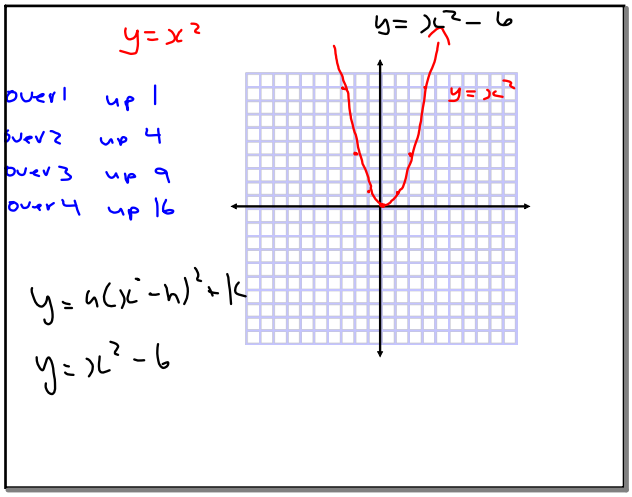

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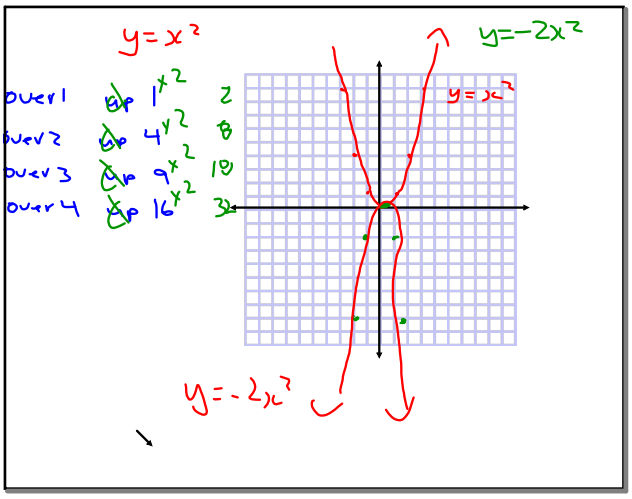

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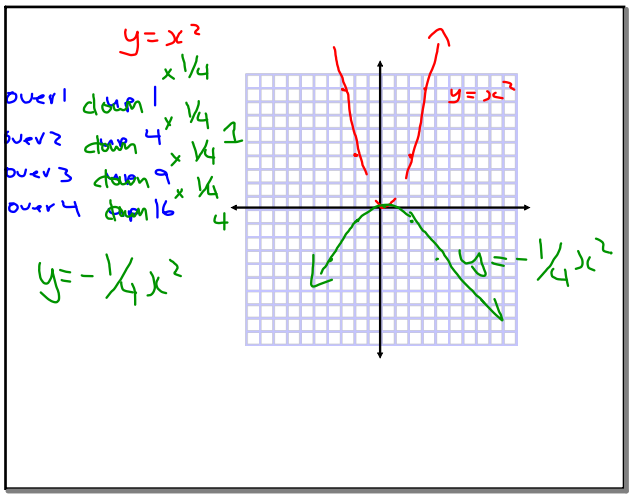

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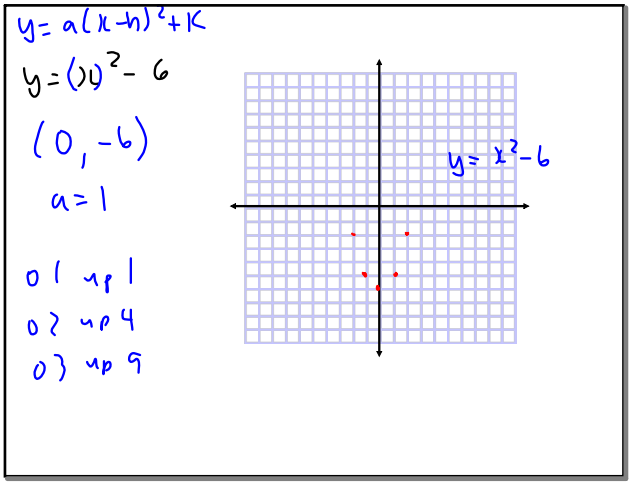

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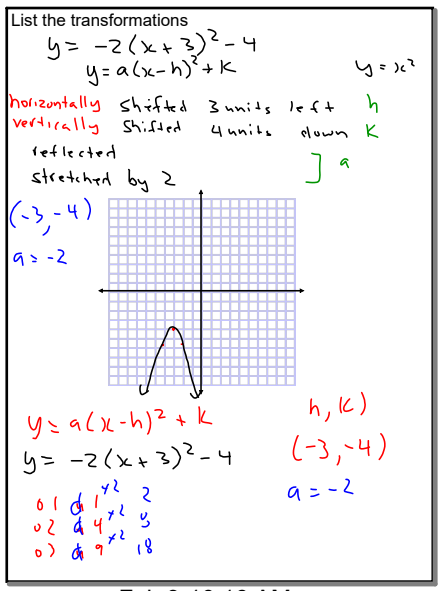


Feb 3-10:16 AM

$y = \frac{1}{3}(x-2)^2 - 1$

$y = a(x-h)^2 + k$

horizontally shifted 2 units right

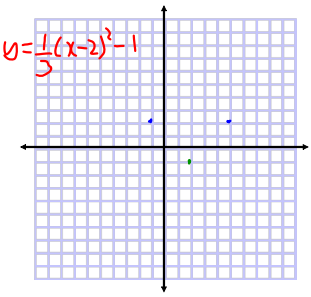
vertically shifted 1 unit down

compressed by $\frac{1}{3}$

(h,k)

$(2,-1)$

$a = \frac{1}{3}$



0 1 u 1 ×1/3

0 2 u 4 ×1/3

0 3 u 9 ×1/3 → 3

0 4 u 16 ×1/3 → 4 1/3

Feb 3-2:06 PM

Hmk p3 & 4

q 3-10

p 5 complete

Feb 3-2:11 PM

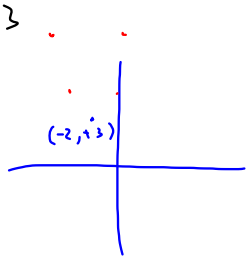
$y = a(x-h)^2 + k$

$y = 2(x+2)^2 + 3$

$(-2, 3)$

$h \quad k$

$a = +2$



×2

0 1 u 1 ×2 2

0 2 u 4 ×2 5

0 3 u 9 ×2 11

Sep 6-10:43 AM